THE SAN DIEGO ATARI® COMPUTER ENTHUSIASTS NEWSLETTER

October 1982

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FROM THE PREZ

First, I want to thank Len Malysz, our new editor, for the great job he did on his first newsletter. Give him all the support you can. I also want to thank Paul Caesar for volunteering to help with locating discounts and bargains for our club members. Another thanks goes to Brian Ritter, who designed the cards we will hand out to prospective members through computer retailers. Now, hopefully, I won't be getting so many phone calls from prospective members. Ted Langlett, our program chairman, has several good programs lined up for us. Be sure you support our speakers by attending the meetings.

We are looking for volunteers to run for office next year. Don't be shy. We need you. Elections are coming up soon.

At the board meeting, it was decided to increase the dues to $10 per year. This increase will help offset the printing cost of the newsletter and provide funds to improve the meeting environment. This increase in dues will be brought to the membership at the October meeting for a vote.

Here is a bit of useless information — an Atari joystick can be found in one out of every five homes in America.

We still need someone who will be in charge of ensuring that we have equipment at the monthly meetings. With 185-plus members, there should be someone out there who can help.

The new *Atari Special Editions* is at the stores now. We should be getting our club copy soon. Also, parts 2 and 3 of the Atari video tapes should be out by the end of the year. As soon as they're announced, we'll put in a request to show them at our meetings.

The San Diego Computer Expo will run Friday, Saturday, Sunday, and Monday, February 18 — 21, 1983. We'll have a booth at that show just as we did last year. Jim Gollwitzer is in charge of the booth. Please contact him if you'd like to help, either personally or with equipment.

If you have a program you want to market, Softwarepro will list it in their catalog, free of charge, if you send in your application by October 20. Call me for more information. That's all for now.

Dick Hiatt

NORTH COUNTY ATARI

Our second North County Atari meeting was exactly the kind of meeting we hoped it would be. We had about 20 people, and a couple of computers. People came and went as they pleased. We played with PILOT, BASIC, and FORTH. The meeting was totally dedicated to playing with computers. Judging from the size of our meeting facility, we could accommodate about 35 people and 8 computers. With people coming and going, we can accommodate more than 35 people over the time frame from 6 p.m. to 10:30 p.m.

Our next meeting will be in the same time, same place. Join us Tuesday, October 19, at 8081 Mira Mesa Blvd., on the south side of the street just west of the movie theaters. Hours again will be from 6 p.m. to 10:30 p.m. and you can come and go any time you please.

Ron Miller

FROM THE EDITOR

Questions, questions, who's got the questions? Either we've got the smartest bunch of computer enthusiasts in the world, or some of the most timid, because to date, not one question has come into the editor's corner regarding the Atari computer, disk drive, interface module, modem, programs, etc. If you have a question and don't want your name used, say so — we'll protect your privacy. After all, we're looking to expand our collective base of knowledge, not embarass anyone. Don't let the sophisticated level of questions asked at meetings bar you from solving a perplexing situation you're experiencing with your computer. Chances are, there are a lot more out there having the same problem, but are afraid to ask.

We have a full load of information for this month's newsletter, so I'll keep my column short, but not before thanking Chris Edwards for his comprehensive index of magazine articles on the Atari computer. He's compiled four full pages of listings, two of which appear this month. Look for the other two pages in the November issue. Also, thanks go to Brian Ritter, who not only contributed two articles, but typeset them as camera-ready copy. Bless you one and all.

Len Malysz

FROM THE LIBRARY

Regarding new programs in the library, there are two new games, a few utility programs, and one really nice player/missile editor. Let me expound on the latter for a moment. This program allows you to construct a player/missile, change its color, size, and resolution, and edit, view, move, and save it. The save is done in the form of data statements that are then plugged into your program. This program, along with some other useful utilities, can be found in *Compute's Second Book of Atari,* an extension of the first book.

I would like to take this opportunity to welcome all our new members, and invite them to submit programs to the library, as well as take some out.

Well, that about does it for this month. Keep those cards and letters coming in, and don't let BASIC get the better of you. See you next month.

Chuck Fowler

SECRETARY'S REPORT

The September meeting was opened at 6:45 by President Dick Hiatt, with an announcement that the monthly meetings will continue to be on Monday nights. We were pleased to welcome more than 20 new members.

Ron Miller gave a report on the FORTH special interest group meeting at USIU, where only seven people attended although many more had shown interest when it was first proposed. According to a quick head count, 20 of our members have an Atari-compatible FORTH system. Ron also announced that the North County group would be meeting on Tuesdays following the general meeting from 6 p.m. to 10:30 p.m. The meetings of the NC-SDACE are much smaller and more work-oriented than our general meetings.

The program chairman reported that our guest speaker for November will be a representative from Synapse Software, who will probably demonstrate the games *Slime* and *Picnic* which are due for release soon and, according to Dick Hiatt, are really good.

Librarian Chuck Fowler announced the new hours for the main library:

Monday—7:30 to 9:00 p.m.
Tuesday—7:30 to 9:00 p.m.
Wednesday—CLOSED
Thursday—CLOSED
Friday—CLOSED
Saturday—CLOSED
Sunday—6 to 8 p.m.

Be sure to phone ahead for an appointment. For the branch libraries in Poway and Pacific Beach, you'll have to call their respective librarians (Jim Gollwitzer and Nestor Sanchez). Our library is in need of more programs in the areas of utilities, education, and music.

Our new editor, Len Malysz, was given resounding applause for the professional new look of our newsletter. He urged the need to find a new printing source for the newsletter. With more than 300 copies going to members and other clubs around the world (our humble paper is sent monthly to Europe and Australia), Dick Hiatt has to spend over three hours at the Saxon machine every month. As we continue to grow, this becomes a burden we can no longer ask of our dedicated leader. Any information on low cost (maybe even free) printing should be forwarded to Len immediately.

Nestor Sanchez gave a demonstration of the new Percom disk drive for the Atari. This drive recognizes both single and double density format disks. It has a serial and parallel port to which you can connect an Atari 810 or TRS-80 drives. Nestor is checking out the possibility of connecting low-cost ($200) drives to it, which would have some facinating benefits. Nestor also mentioned the development of a new 20 megabyte hard-disk drive with a dealer cost of $450. As yet, an Atari DOS has not been created for it.

Nestor also demonstrated the Alien Group Speech Synthesizer, which connects through the Atari serial bus to produce speech through the tv speaker. It has a nice demo program with an automated mouth. In contrast to the "hardware mouth," he introduced SAM, the Software Automated Mouth. SAM creates speech through the four built-in sound synthesizers of the Atari. The range of voice levels is amazing. There is one problem in that the screen blanks whenever SAM talks (for you programmers, the NMIs are disabled during speech).

Also at the meeting:

- Vince Martin, the local Atari merchandiser, will be at every meeting. He says we can expect greater support from Atari from now on (three cheers!).
- John ??? (sorry, the last name escaped me) opened On-Line Computers on September 23. They will be conducting basic BASIC classes and supporting the Atari to the hilt. On-Line is offering a 25% discount on classes and a possible 10 — 20% discount on all store items to our members. Their service department plans to be an authorized Atari service center. Current service rates are $35 per hour plus parts.
- Atari is discontinuing the Personal Family Management package, advising the purchase of the APX Personal Finance program, instead. If you have a copy of PFM, you can send it to Atari for a full refund.
- Ted Langlett reports that Atari 800 keyboards are not currently available.

• Dave Rigoli from Apple Country told us a little about his mail order company, which carries a wide range of Atari software and hardware at discount prices. His company also has the distinction of being the first advertiser in the SDACE Newsletter.
• Beginners — look forward to a new owner's and BASIC class to be announced soon. Nestor, Chuck, and I will be conducting it. We've all had experience in computer instruction and feel that you will greatly benefit from this introduction and tutoring.
• Due to the problems associated with group purchases on literature, Dennis will no longer be able to make them.
• Choplifter — a brand new game. Graphics are very nice, and the game is extremely challenging.

Don Perkins

QUEST FOR THE PERFECT ASSEMBLER

Here's another installment of the continuing saga entitled "Search for the Best Atari Assembly Language Development Software." Since my review of the *MAE* assembler from Eastern House Software, two additional companies have entered the field of Atari assembler packages. I've also become a little more familiar with other products I knew were in existence, but hadn't really tried yet. For this article, I'll list the assemblers I've tried, rate them according to my personal preferences, and explain the ratings with further comments about what I think should be in an assembler-editor package.

1. *Synassembler* by Synapse Software; $49.95 disk, $89.95 cartridge.
2. *MAE* by Eastern House Software; $169.95 disk.
3. *EASMD* by Optimized Systems Software; $70 disk (includes OS/A+).

Atari Assembler by Atari Inc.;$49.95 cartridge.
4. *Atari Macro Assembler* by Atari Inc.; $89.95 disk.
5. *DATASM/65* by Datasoft; $169.95 disk.
6. *EDIT 6502* by LJK Enterprises; $199.95 cartridge.

1.Number one is a close battle between *MAE* by EHS (the past champion), and *Synassembler* (a newcomer by Synapse Software). It was difficult to rate these two because each one was the best in their own way. *MAE* still has by far the most features. *Synassembler*, however, is by far the easiest to use and best integrated to the Atari system. In my opinion, ease of use is the most important feature, and on that basis I give the current first place to *Synassembler*. Almost everything this package is designed to do, it does extremely well with very few disadvantages. Most noticeable is the mode of program entry. *Synassembler* uses the same form of BASIC-type line numbering with renumbering capability, but omits the auto-line numbering entry mode. Instead, pressing the TAB key after entering a line causes the next line number to be printed with the cursor in the label field. What this allows you to do is move the cursor back to a previous line to correct a mistake, and then move down to where you were typing data and continue without having to break out of and reenter an auto-number mode. In short, it gives full screen editing capability while in the text-entry mode.

Synassembler is the fastest Atari assembler I know of. Other features include local labels that can be used many times over and don't take up space in the symbol table listing. Direct sector disk I/O is available from the monitor. You give the sector range to read/write, and the address in memory to use. *Synassembler* makes excellent use of the Atari device specs by allowing output to go to any valid device name (e.g. OUT "P:" to send to printer). *MAE*, along with many other assemblers, has a command such as 'TO P' to send to printer, and 'TO A' to send to screen, and no way to send output to any other place. I worked on one system that only had a serial printer, and since I was using *MAE*, there was no way to get a listing. It would have been so easy to allow the user to enter a device spec that could send output anywhere, since the OS will do all the work (like R: for RS-232). That's what I meant by integrating to the Atari system. It seems that too many software people simply transfer from one computer to the other without trying to use the extra features of the Atari.

The only real problem I've found with *Synassembler* is that you can't give a line number range for the search and replace commands. Many times I've wanted to do an unconditional replace on just one part of a file and have done it by hand.

Synassembler is a very basic assembler package that does not have a lot of extra features, like the *MAE* assembler, but does have many small features that make using it a pleasure.

2. The previous champion fell to position two, not because of what it can do, but because of how it's done. The problem of sending output anywhere was already mentioned. The *MAE* package resides at $3000 in memory, which splits user RAM instead of leaving one large chunk in low memory with the assembler in high memory where it should be. The file structure is completely incompatible with any other assembler, making conversions to and from *MAE* very difficult. This structure also does not allow the use of inverse video for data statements. The disk I/O for source files is slower than a normal load. When using an 810 drive, files take about 2½ times longer to load than they do with *Synassembler*, but that isn't the worst part.

There are two other disk systems I use for development. One is the Axlon *Ramdisk*, and the other is the parallel disk system from Leading Edge. When using *Synassembler*, file loads are almost instantaneous with the *Ramdisk*, and takes 1 to 3 seconds with the Leading Edge system — a substantial difference over 810 speed that makes editing fast and easy. However, with *MAE*'s slow I/O routines, I can hardly notice the difference, even between 810 vs *Ramdisk* speed. When using the Leading Edge system, *MAE* file loading is 12 times longer than with *Synassembler*. After spending a lot of money on these tools, it's very depressing to lose the advantages they give due to slow I/O routines.

As for closing comments on *MAE*, I still think it's a very good package, but it has many problems that are extremely annoying to me. As I've said before, it does have many excellent features, and its problems may not be as annoying to other users.

3. *EASMD* and the Atari cartridge got an equal rating because they're essentially the same. *EASMD* adds a symbol table, word error messages, and multiple source file capabilities. Both packages are well adapted to the Atari, and have very few disadvantages. Speed of assembly, however, is one problem area. These assemblers process about 60 lines per minutes compared

with 6,500 lines for *Synassembler*. It also has the slow I/O routine problem that *MAE* has.

4. The *Atari Macro Assembler* can be placed above or below *EASMD*, depending on the type of project it'll be used on. For large projects, it would probably be better than *EASMD*, because of speed.

The *Macro Assembler* has many problems concerning ease of use. It's completely disk bound, assembling only from disk to disk. If you're assembling a large project with multiple source files, it works fine, since that's what it's designed to do. But for smaller applications, it's a cumbersome system to work with. The editor and assembler are two separate files on the disk. A lot of disk access is required to load both of these programs back and forth, as well as the source and object files. With 810 speed, this becomes a real test of endurance. Even though the actual assembly time of the file is much less than *EASMD*, a lot of extra time is taken waiting for disk loads. The editor also has the low disk I/O routines mentioned earlier.

It would be nice to use the *Macro Assembler* with a *Ramdisk*, since the time for all disk loads except source files would be almost cut to zero. Assembly time would also be shortened, but not to the speed of a good RAM-based package. Even this, however, is not possible. The absolute horror of the *Macro Assembler* is that Atari ships the product on a copy-protected disk. You can't execute the package from a *Ramdisk* without breaking the copy protection. I found it unbelievable that they would protect a software development tool. On top of this, they give you only one diskette, and since you can't back it up, all it takes to put you out of business is for that one disk to go bad. And if all that isn't enough, the diskette was formatted at the original slow format speed! In addition to being disk bound, diskettes have to be swapped constantly from program disk to data disk. I also found that while the editor is really nice to work with (it's a full-screen text editor similar to word processing), it is a big hassle to swap diskettes and reload program and data files.

5. *Datasm/65* has the capability to be number one. It has a beautiful word-processor-like text editor, a fast assembler section, and a good monitor, all resident at the same time. It unfortunately has more problems than any of the other packages. It's also at $3000 in memory, and uses incompatible object files that are very slow loading. Its editor trashes files occasionally and, for some reason, it doesn't use the screen editor for monitor input — a suprising problem that doesn't seem to make sense because it's as easy to input from the editor as it is to input from the keyboard directly. The explanation is probably that it was translated from the Apple version, which would've had to do straight keyboard input. This package also doesn't work with the OS/A+ DOS,forcing the user to use Atari DOS 2.0. I think that's a horror no one should have to live with.

6. It's very surprising that the most expensive assembler on the market turned out to be the worst. It's for a good reason. LJK was able to follow in *Datasm/65*'s footsteps, but took it much further. They completely disabled the Atari built-in screen editor. In its place, they implemented the same type of text entry as on the Apple II. If a line is to be reentered, it has to be copied completely over using the forward arrow key. Program entry is completely line edited. To correct line number 123, one must type 'EDIT 123', after which the computer will print the line to the screen for you to edit. The insert and delete keys work at this point but do not function except when in the line editor, or during actual program entry. There is no standard Atari editing when in the monitor or command lines mode of the assembler. CNTRL-1 doesn't pause output at any time, and even though CNTRL-S does, what Atari user is accustomed to pressing CNTRL-S? In summary, LJK has turned a well-designed Atari computer into an Apple II. This feature (???), in my opinion, is difficult to justify. I can find no advantages to their mode of input.

John Harris

FORTH PROGRAMMING

If you tried the AGE GUESS program in last month's newsletter, you discovered it didn't work. I printed the wrong edition of that program. That program simply won't work, but it sure looks good on paper. Here is one that will work.

```
0 ( AGE GUESS PROGRAM )
1 : AGE
2   64 64 0 32 DO CR
3     ." IS YOUR AGE < " .
4     KEY 89 =    ( KEY TEST )
5     IF I -      ( KEY = Y )
6     ELSE I +    ( KEY NOT = Y )
7     THEN DUP I 2 /
8       MINUS ( NEW INDEX )
9   +LOOP CR
10  ." IS YOUR AGE LESS THAN " .
11  KEY 89 =      ( KEY TEST )
12  IF 1 -        ( KEY = Y )
13  THEN CR
14    ." YOUR AGE IS " . ;
15
```

FORTH DISK

One of the things I really like about FORTH is its utilization of disk. FORTH doesn't have a file manager or directories or anything like that. That can be a big disadvantage if you want to do a lot of file management, but there are many applications where file managers can get in the way. FORTH's use of disk is very simple. An Atari disk has 720 sectors of 128 characters maximum on each line. That is exactly how FORTH looks at a disk. In QS FORTH, a sector is called a *block*. Blocks are numbered from 1 to 1379. Block 1 starts on disk drive 1 in sector 64 and block 1379 is on drive 2 in sector 719. What this means is FORTH doesn't distinguish between disk drives. If I ask for block 1200, I get block 1200 and I don't care where it's located. FORTH figures out which disk to use and it goes directly to the desired sector, so disk reading is as fast as it can get.

So what are some good applications for this kind of disk management? Well, you can look at FORTH disk like a large box of 3x5 index cards where each index card is numbered (1 to 1379). I won't bother to bore you by listing the kinds of things you can put on index cards, but index cards form the basis of the most common filing system in the world. And it is a piece of cake to write FORTH programs that thumb through this box of index cards looking for something special. It is easy to

ask FORTH to print a block on the screen. Here is a short program that will do just that in QS FORTH.

```
: BT ( Expects the block # on the stack )
CR BLOCK 128 TYPE CR ;
```

Isn't that complicated? Actually, I prefer to have blocks printed out in 4 lines of 32 characters each. Here's a command definition that will do that.

```
: BT ( Block # on stack )
CR BLOCK 4 Ø DO
DUP 32 TYPE CR ( one printed line )
32 + LOOP ;
```

To use it, all you do is type:

```
650 BT "return"
```

and you will see index card number 650 printed on the screen. If you just play with this for awhile, it will dawn on you that this opens up the most fantastic possibilities for direct use of your disk drive for storing data in a manner that is easy to understand. What you see printed on your screen is exactly what is stored on disk. And because FORTH manages these blocks automatically, the Atari thinks it has 176.5k bytes (1379*128) of memory in addition to the 48k of memory already in the computer.

Ron Miller

SOFTWARE REVIEW

Tape Based APX Extended figFORTH

Atari Program Exchange ($39.95)

You can't imagine how disappointed I am in the cassette tape version of figFORTH available recently through the Atari Program Exchange. Do not confuse the tape version with the disc version—the disc version works. Well, it's not so much that the tape version doesn't work, but rather that it's unworkable. I'll try to explain why and indicate what might be done about it.

This is the first tape based version of figFORTH available for the Atari. It loads into a 16K machine in about a minute or so, filling about 9856 bytes with the figFORTH kernal, debug package and assembler. The extensions are not much more than minimal but do include a floating point package, double precision words, a nondestructive stack print and a very limited decompile word. Also included is a "CSAVE" word which produces a self-booting tape version of FORTH and anything you've compiled into it. ("CSAVE", unfortunately, uses the long—I mean L-O-N-G—interrecord gap which makes the use of it and the produced copy unbearably time and tape consuming, about seven minutes—like LIST "C:" and ENTER "C:" in BASIC.)

What you don't get on the tape version but does come on the disc for the same price are all the nifty graphics and sound words, and the editor vocabulary.

"What?!" you exclaim.. "If there's no editor then how do you write and alter source code?"

You don't.

That's right. This tape version doesn't support source code. In other words it's almost impossible to write a program. Imagine trying to use BASIC to write a program, only you can't LIST it, and if a line scrolls off the top of the screen it's like it never existed. That's similar to what this tape FORTH does.

I told you it was unworkable.

So what can be done about it? Well, fortunately, something can be done, but it goes against the philosophy of FORTH. One beauty of FORTH is it's transportability—the ease with which a FORTH program is translated from one environment to another, e.g. from an Apple to an Atari. This transportability is due in large part to the willingness of most users to conform to a universal standard for the language—the most recent being the FORTH-79 standard. The Forth Interest Group has developed figFORTH implementations for nearly all microprocessors, and they are public domain (free). The differences between fig-FORTH and FORTH-79 are very few.

An essential feature of FORTH is "virtual memory" which allows the user to use disc memory in an integral way as if disc memory were RAM. This means that a tape based system can never really conform to a "virtual memory" system in a transparent fashion. But we can do so in a non-transparent way.

What I am proposing is this. The tape version runs in a 16K or larger environment. Within that 16K resides the language (10K), the screen display area (1-8K depending on graphics mode), and, even though we have no access to it without the editor, the block buffers (I think this version uses three buffers—so 3K). The block buffers are the areas in RAM where disc memory goes to become real RAM instead of "virtual" RAM. These buffers are read by FORTH in order to be executed immediately, to be compiled for later use, or to serve as storage for source code available to the editor. Stuff comes off the disc, gets acted on, gets sent back to the disc, and all this goes on unbeknownst to the user; we just seem to have an awful lot of memory for a 16K machine (about 80K worth, in fact). That is, if you've got a disc system.

The solution for us poor tape based people is two fold: 1) get the buffers to recognize tape memory, and 2) take the disc access away from the dictionary so it doesn't mess us up with "device does not respond" errors.

This way you can load the buffers with tape data including source code, make your changes, debug, whatever and then store it back on tape for later use. Or you could execute the source code in buffers just like the disc system does except that in a 16K machine you are limited to just the three buffers (3K) per program. For larger machines you can expand the number of buffers to fill the memory available using up 1K per buffer. The number of buffers would be adjusted by the user depending on the memory needs for vocabulary space, arrays, etc. for each application.

That the author of the Extended figFORTH didn't do this is disappointing. But it is a downright rip-off that APX offers this tape version without those changes at the same price as the working disc system. I expected some concessions for working with a tape FORTH, but it should at least work even in a lumbering tape fashion.

Do not buy this version of FORTH until these changes are made. And let APX know how you feel.

I am willing to work with anyone who wants to try and make these changes. Call me anytime except between 11 p.m. and 9 a.m. at 278-9539.

Brian Ritter

FOR SALE

Game software, used. On disk with original documentation. *Zork-II, Wizard/Princess, Empire of the Overmind,* many more. Sell, trade? John, 457-2678.

WANTED

Atari 400 or 800 computer. Call John Holtry at work 457-1000, X480, or at home 789-8330.

ATARI JOURNAL ARTICLES (BY TITLE)

by Chris Edwards

TITLE	CODE	EXTN	JOURNAL	DATE	PAGE
'Tari Talkers,Speech Synthesis Comparison	HWARE	VOICE	ANTIC	82JUN	18
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A Direct Access File Editor	FILES	BAS	COMPUTE	82JUL	97
A Mortgage Amortization Program for Atari	FIN	BAS	CREAT CP	82OCT	250
A New Technique For Mixing BASIC & Mach.Lang	TECH	BAS	COMPUTE	82MAY	52
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A Self-Modifying P/M Graphics Utility	P/M	BAS	COMPUTE	82JUN	120
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Atari Memory Dump & Dissassembler	UTIL	BAS	COMPUTE	81MAR	80
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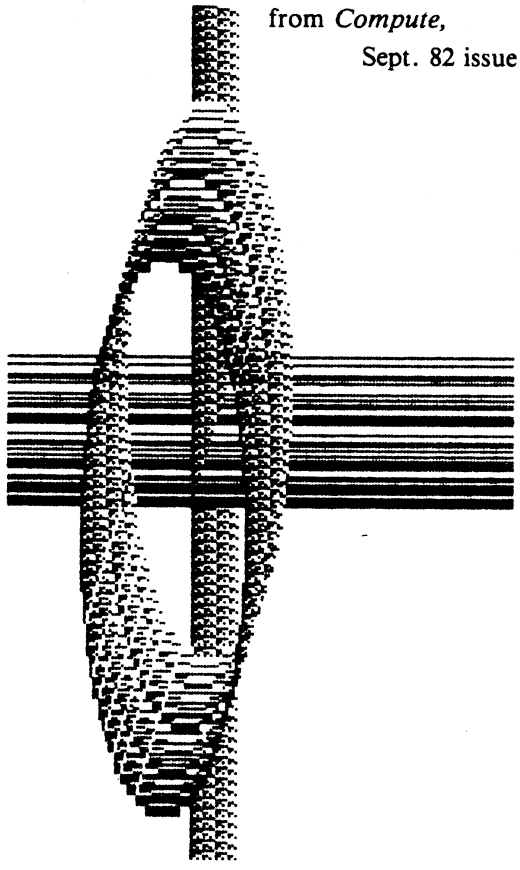
Atari Microsoft BASIC:Part 1	REV	MBAS	COMPUTE	82MAR	122
Atari Microsoft BASIC:Part 3	REV	MBAS	COMPUTE	82MAY	60
Atari Microsoft BASIC:Part 2	REV	MBAS	COMPUTE	82APR	178
Atari Pilot At The Helm	EDUC	PILOT	COMPUTE	82FEB	104
Atari Program Library (APX 20056 program)	UTIL	BAS	COMPUTE	81OCT	112
Atari Rainbow:Colors By Page Flipping	GRAPH	BAS	COMPUTE	82OCT	159
Atari Sketchpad	GRAPH	BAS	COMPUTE	82AUG	72
Atari Timing Delays	HWARE	BAS	COMPUTE	81NOV	104
Atari Variable Table Refresh & Prog. Backup	UTIL	BAS	COMPUTE	82JUL	151
Atari Video Graphics & The New GTIA Part 2	HWARE	GTIA	COMPUTE	82AUG	108
Atari Video Graphics & The new GTIA:Part 1	HWARE	GTIA	COMPUTE	82JUL	124
Atari Video Graphics & The New GTIA:Part 3	HWARE	GTIA	COMPUTE	82SEP	142
Atari Word Processors	WORDP	REV	CREAT CP	82JUN	67
Axlon RamdisK	HWARE	REV	CREAT CP	82MAY	30
Banner Maker	GRAPH	BAS	ANTIC	82AUG	28
BASIC A+ Review	REV	A+	COMPUTE	82AUG	95
BASIC Range Delete	UTIL	ASM	ANTIC	82AUG	15
Basically Useful BASIC:Ascending/Desc. sort	P/GEN	BAS	COMPUTE	81APR	36
Basically Useful BASIC:Tabulation	P/GEN	BAS	COMPUTE	82MAR	30
Beginner's Page:Making Files Work	FILES	BAS	COMPUTE	82JUL	22

Beware The Ramtop Dragon (saving memory)	OS	BAS	COMPUTE	81OCT	90
Billiard Bounce	GRAPH	DEMO	COMPUTE	81DEC	106
Blinking Characters	UTIL	ASM	COMPUTE	81DEC	108
Budget Worksheet	FIN	BAS	ANALOG	7 #	39
Buncrush (Atari BASIC cross reference util.)	UTIL	BAS	ANALOG	7 #	13
C.A.T.S.:Part 1(computer assisted testing)	EDUC	BAS	SOFTSIDE	31 #	23
C.A.T.S.:Parts 2 & 3(Computer Testing Sys.)	EDUC	BAS	SOFTSIDE	32 #	47
Cassette Boot-Tape Generation	OS	ASM	COMPUTE	81OCT	84
Caverns Of Mars	GAME	REV	COMPUTE	82JUL	183
Chicken	GAME	BAS	ANTIC	82APR	19
Clearing Memory	P/GEN	BAS	COMPUTE	82FEB	95
Computer Assisted Geometry Discovery	EDUC	BAS	COMPUTE	82MAY	72
Concentration	GAME	BAS	COMPUTE	82MAR	106
Considering Space & Time In The Atari	TECH	BAS	COMPUTE	82MAY	143
Copy Atari Graphics To Your Printer	GRAPH	BAS	COMPUTE	82JUN	62
Copy Your Atari Screen To Your Printer	GRAPH	BAS	COMPUTE	81MAY	78
Crash-Tinkle-Tinkle (Game programming tech.)	GAME	BAS	ANTIC	82JUN	21
Creating A Simple Word Processor	WORDP	MBAS	COMPUTE	82FEB	36
Cross Reference	UTIL	BAS	SOFTSIDE	82MAY	61
Cryptogram	GAME	BAS	COMPUTE	82JAN	103
Death Star	GAME	BAS	ANTIC	82JUN	27
Designing Your Own Character Sets	CHAR	TECH	COMPUTE	81MAR	72
Developing A Business Algorithm	BUSS	BAS	COMPUTE	82JAN	48
Dino Battle	GAME	BAS	ANALOG	7 #	26
Discovering Atari's Hidden Graphics	GRAPH	BAS	COMPUTE	81DEC	98
Disk Data Structures:An Interactive Tutorial	FILES	BAS	COMPUTE	82MAR	156
Documented Atari Bugs	P/GEN	BAS	COMPUTE	81OCT	94
Eastern Front	GAME	REV	COMPUTE	82FEB	94
Eastern Front	GAME	REV	CREAT CP	82JAN	44
Editing BASIC Programs With The Atari Assem.	UTIL	BAS	COMPUTE	82SEP	188
Energy Workbook	HOUSD	BAS	COMPUTE	82MAR	44
Extending P/M Graphics	P/M	BAS	COMPUTE	81OCT	98
Extra Colors For Atari Through Artifacting	GRAPH	BAS	COMPUTE	82MAY	158
Faster Character Dumps	P/GEN	BAS	ANALOG	7 #	32
Formatted Output For Atari BASIC	P/GEN	BAS	COMPUTE	81MAR	84
Formatting Input	P/GEN	BAS	COMPUTE	81NOV	109
Getting Along W/O Tab (tab demo via a game)	GAME	BAS	CREAT CP	82SEP	176
Getting Your Atari Disk Drive Up To Speed	HWARE	810	COMPUTE	82MAY	126
Ghost Programming(conserving memory)	P/GEN	BAS	COMPUTE	82MAR	190
Gold Rush!	GAME	BAS	COMPUTE	82JUL	27
Grading Exams On A Microcomputer	EDUC	BAS	COMPUTE	82APR	70
Graph It On The Atari	GRAPH	BAS	COMPUTE	81OCT	96
Graphics 8 In Four Colors Using Artifacts	GRAPH	BAS	COMPUTE	82JUN	76
GTIA	HWARE	GTIA	ANTIC	82APR	40
GTIA Demonstration	HWARE	BAS	COMPUTE	82SEP	172
Guess That Animal!(Simulating Learning)	EDUC	BAS	COMPUTE	82AUG	84
Hardware Evaluation:Mosaic;Axlon;Microconnec	HWARE	REV	INT AGE	82JUN	50
Hardware Evaluation:Atari 800	HWARE	REV	INT AGE	82MAY	58
Household Budget Manager	FIN	BAS	COMPUTE	82AUG	39
Income Property Report	FIN	MBAS	COMPUTE	82JUN	20
Infinite Precision Multiply	STAT	BAS	COMPUTE	82MAR	62
Insight:Atari I/O,Part 4;Inside BASIC,Part 2	TECH	OS	COMPUTE	82FEB	77
Insight:Atari I/O,Part 2;Columnar Output	TECH	OS	COMPUTE	81DEC	89
Insight:Atari I/O,Part 3;M:Driver;BASIC,Pt.1	TECH	OS	COMPUTE	82JAN	120
Insight:Atari I/O,Part 1;Bugs In BASIC	TECH	OS	COMPUTE	81NOV	96
Insight:FMS;Speed & BASIC,Bounc.Ball,Part 2	TECH	BAS	COMPUTE	82SEP	116
Insight:Graphics;Inside At.BASIC,Part 6;FMS	TECH	ASM	COMPUTE	82JUL	165
Insight:Inside Atari BASIC,Part 5	TECH	BAS	COMPUTE	82JUN	162
Insight:Playit	TECH	ASM	COMPUTE	82MAR	130
Insight:Soft keys;Inside Atari BASIC,Part 4	TECH	OS	COMPUTE	82MAY	162

GTIA DEMO *by Fritz Porter*

from *Compute,*
Sept. 82 issue



BARGAIN CORNER

This column is dedicated to saving money and time searching for bargains. I will search out the lowest prices for software, disks, cassettes, paper, labels, and other computer supplies. I've found stores that charge list price give very little in the way of service and technical advice, so for me, cheaper is better.

To start my list of bargains: for software, check with Apple Country (714) 765-0239. They'll order almost any Atari software, and their prices are very low. Next is Border Software (800) 962-9311 at 1196 3rd Avenue in Chula Vista. This is a new store that will order software at 25% off list.

For cassettes and disks, stop by ABM, 8868 Clairemont Mesa Blvd. or, for disks, Super City located downtown, El Cajon, and Kearny Mesa. Up in Clairemont is Kirk Paper, a good place to buy paper and labels. They're at 9737 Aero Drive. Price Club also sells 8½x11 paper at a very low price.

The list of Atari dealers is too large to list in one column. Some are: The Federated Group, Toys R Us, Pacific Stereo, Fedco, and The Broadway. Pacific Stereo has advertised the Atari 400 for $248.

As the months roll by, I'll try to list all the bargains and sources for the Atari computer. If you find a gem, share it with us by writing a note to: Paul Caesar, 377 Fashion Valley, San Diego, CA 92108.

Paul Caesar

THE SAN DIEGO
ATARI COMPUTER ENTHUSIASTS
NEWSLETTER

5353 Baltimore Dr., No. 39
La Mesa, California 92041

COMING EVENTS:

We meet October 18 at 6:30 p.m.,
Social Room,
North Park Recreational Center,
4044 Idaho St.
San Diego

Agenda:

Main Speaker — John Loveless from Synapse Software
Interest Groups
- BASIC
- Beginning Atari
- FORTH
- PASCAL
- Hardware

TO: